Non-agricultural Application of Soil Surveys


The increasing application of data obtained from soil surveys in urban planning and engineering are featured in this book. Fifteen papers by leading experts from Australia, New Zealand, the Netherlands, Canada, and the United States are included. Dikey breaches, earthquake damage, archaeology and map-making in mountainous areas are additional, novel subjects covered in some of the papers.

The application of soil surveys to regional planning in the large metropolitan area of southeastern Wisconsin is discussed by Bauer. Relating 15 years of experience in the use of soil surveys, Bauer reviews his concept of planning from the standpoint of a limited natural resource base, and concludes that the recognition of soil properties is a vital aspect of such planning. He notes that soil surveys provide "the essential link between development costs and geographic location," and comprise "one of the soundest investments of public funds that can be made." Pettet and Coleman review 20 years of experience in the application of soil surveys in the rapidly urbanizing Fairfax County, Virginia, noting many advantages derived through the use of the data. Lindsay, Scheel, and Twardy describe recent applications of soil surveys around Edmonton, Alberta, both in land use planning and site selection and in identifying construction practices to overcome soil limitations such as corrosion and shrink-swell potentials and wetness. Westerveld and van der Kruit discuss land use pressures and dense population in the Netherlands where major investments are often required to make soils suitable for urban development. Soils are rated on the basis of the costs per hectare of such improvements, and kinds of practices required are identified. Zayach relates the value and use of soil surveys in Massachusetts for community planning including the determination of lot sizes, and reports dollar savings that result. Application of soils data to recreation planning and some problems of mapmaking in a mountainous area in Canada are discussed by Coen.

Reporting the extensive application of pedology to highway engineering in Michigan since the 1920's, Allemeier, an engineer of the Michigan Department of State Highways, describes the benefits of soil surveys to his organization. He notes that the soil series name brings to mind geology, topography, texture, drainage characteristics of an area and, backed by extensive field correlation, experience, and performance records, is highly valuable to his Department.

Aitchison, a soil engineer in Australia, reviews 25 years of application of soil survey principles in foundation engineering. The fact that intrinsic soil properties and the natural environmental controls over these properties are coupled together, and both linked to the soil profile, makes the soil survey a valuable tool in foundation engineering. Some limitations in the application of soil surveys are discussed, but the results are said to be "little short of astounding" in identifying problem soils and in indicating corrective designs.

Three papers deal with waste disposal in soils. Beatty and Bouma discuss innovative designs for on-site sewage disposal systems and selection of suitable sites in Wisconsin using soil surveys. A program for introducing soil surveys into planning for disposal systems is proposed. Wells reports the use of soil surveys in New Zealand to identify soil properties that influence effluent disposal. Loghry of Pennsylvania describes sanitary landfills and their soil requirements and notes that soil surveys provide valuable data for selection of suitable landfill sites. Westerveld and van der Weerd. Also, Pullar describes how volcanic ash (tephra) beds may be reworked for disposal systems is proposed. Wells reports the use of soil surveys in New Zealand to identify soil properties that influence effluent disposal. Loghry of Pennsylvania describes sanitary landfills and their soil requirements and notes that soil surveys provide valuable data for selection of suitable landfill sites. Westerveld and van der Weerd. Also, Pullar describes how volcanic ash (tephra) beds may be reworked for disposal systems is proposed. Wells reports the use of soil surveys in New Zealand to identify soil properties that influence effluent disposal. Loghry of Pennsylvania describes sanitary landfills and their soil requirements and notes that soil surveys provide valuable data for selection of suitable landfill sites.

This concise monograph consists of eight chapters on the chemistry and reaction of humic substances in soil. The book is to some extent a synthesis of research conducted by Dr. Schnitzer and his associates to the year 1972 and is not as oriented towards the applications as the title might suggest.

A brief introductory chapter (7 pages) is followed by chapter 2 on the extraction, fractionation, and purification of humic substances. This is followed by three chapters on the chemistry of humic and fulvic acids. Characterization of humic substances by chemical analysis, determinations of oxygen-containing functional groups, and determination of molecular weights are dealt with in Chapters 3 and 4. A chapter on the chemistry of humic substances is included and is followed by a chapter on the chemical structure of humic substances in soil. Chapter 6 deals with the reactions of humic substances, Chapters 7 and 8 with reactions involving organic chemical oxidants. All three chapters are worthy of careful scrutiny by specialists in these areas.

The book will be particularly useful to the specialist in soil chemistry, as well as to the chemist interested in organic matter chemistry, as well as to the chemist interested in organic matter chemistry. It is too advanced for most undergraduate or graduate students in soil science, but is suitable as a reference text for a graduate course in soil biochemistry.—F. J. STEVENS, Assistant Director, Soil Survey Interpretations, Illinois, Urbana, Ill.


In perusing this volume the first concern is the timing date (1971) with the time of publication, to determine if the material will be out of date of concern. After reading the introduction and reviewing the topics which are covered, one can conclude that it has been worthwhile in spite of the publication date of the publication date. The book should be of interest to soil microorganisms, as with many related scientists, required an ability to work with and for ecological areas, especially as the role of the meso-fauna in the soil microcommunity functions are certainly not understood in sufficiently quantitative terms. The book provides a helpful conceptual basis for further research in these fields, these offerings might appear unnecessary, but in total they provide a helpful conceptual basis for further research in these fields.